

**Center-Johnson Project**  
**Invasive Plants Specialist Report**

Nez Perce-Clearwater National Forests  
Salmon River Ranger District

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## ***Introduction***

Invasive plants are an important ecosystem attribute to consider when assessing watershed conditions and vegetation objectives. Invasive plants have the potential to affect native species richness and frequency, erosion rates, and ecological processes. Invasive plants may alter ecological equilibrium to a point where the change is permanent. Invasive plants can expand following man caused or natural disturbances and colonize degraded as well as intact habitats. Many invasive plants found in the intermountain west were accidentally or intentionally introduced into North America between the 1880s and 1920s. Without their natural predators and pathogens, exotic plants can expand unchecked.

The Forest received public comments about the impact of existing and proposed actions on invasive plant species. See also Appendix C of the EA.

## ***Scope of the Analysis***

This report addresses the presence of state-listed invasive plants, otherwise known as noxious weeds, relative to expansion risk zones, susceptible habitats and spread pathways of the project landscape. The effects are considered within the Center-Johnson Project area. Cumulative effects are considered within the Salmon River canyon.

## ***Regulatory Framework***

Analysis and evaluation of invasive plants in this project is based on direction contained in The Federal Noxious Weed Law (1974) as amended (1975), Executive Order 13112 for invasive plants, Forest Service policy (FSM 2080.5; 2000-95-5; USDA-FS 1995), Northern Region Supplement (FSM 2080; R1 2000-2001-1; USDA-FS 2001), Implementation of Integrated Weed Management on National Forest System lands in Region 1, and the Nez Perce National Forest Plan (II-7,II-20,II-26,III-6).

In general, the Forest is directed to implement an effective invasive plants management program with the objectives of preventing the introduction and establishment of state listed noxious weeds; containing and suppressing existing infestations; and cooperating with local, state, and other federal agencies in their management.

## ***Analysis Methods and Indicators***

### **Invasive Plants Inventory Data (Indicator 1)**

As an active participant in the Salmon River Cooperative Weed Management Area (SRCWMA) surveys have been conducted by both the USFS and County contractors. A coordinated invasive plants database maintains records for the entire management area including size of infestation, name of target plant, density and a GPS'd location. As a result existing invasive plants populations are reasonably well known on NFS lands in the project area. Where populations have been documented and/or treatments have occurred the data is accurate and reliable. In general it is expected that most occurrences are larger than existing documentation indicates. This is based upon the prevalence of invasive plants in the Salmon River drainage and the lack of roads into susceptible habitats.

### **Invasive Plants Expansion Probability (Indicator 2)**

Invasive plants expansion probability is determined by use of a "risk model" developed by the Nez Perce National Forest. This model is based upon susceptibility, as determined by habitat type groups (HTG); as well as, known invasive plants occurrence (seed source), site disturbance (fire/harvest/grazing) within the past 10 years and spread vector (adjacency to roads/trails). The logic and framework that this model is based upon has been widely respected and adapted for a broader regional-level prediction model sanctioned by the Region One office of the U.S. Forest Service. Geographic Information Systems (GIS) data were used to display and calculate acres of activities occurring in each invasive plants expansion risk zone.

## Summary of Analysis

### Existing Condition

- Approximately 22 percent of the project area and less than 1 percent of proposed treatment areas are currently infested with noxious weeds.
- Approximately 66 percent of the project area is modeled at high or extreme risk for invasive plants expansion, while 31 percent is of moderate risk to expansion.
- Knowledge of the extent of existing noxious weed populations is good due to good access from existing roads and trails.
- Most existing noxious weed occurrences are associated with large south-facing grassland habitats that are highly susceptible to invasive plants.

### Environmental Consequences

- Invasive plants spread is likely to occur under implementation of the proposed action and under no action.
- Invasive plants expansion risk is not expected to increase significantly from the proposed activities because risk in the proposed treatment units are 72 percent low or moderate.
- The extent of invasive plants spread would be dependent on implementation and effectiveness of existing treatments.

### Existing Conditions

#### Current Infestations

Current invasive plants inventories in Table 1, and Figures 1 & 2, identify several occurrences of state-listed noxious invasive plants within the project, some of which are very large. Some general occurrence of invasive plants such as Cheatgrass, St. John's-wort and other naturalized weeds can be assumed to occur on the roadsides and warmer, more open habitats.

**Table 1: Acres of Inventoried State-Listed Noxious Invasive Plants**

Species	Project Area
Common crupina ( <i>Crupina vulgaris</i> )	1,439
Yellow star-thistle ( <i>Centaurea solstitialis</i> )	374
Spotted knapweed ( <i>Centaurea biebersteinii</i> )	25
Rush Skeletonweed ( <i>Chondrilla juncea</i> )	190
Gypsyflower ( <i>Cynoglossum officinale</i> )	106
Spiny plumeless thistle ( <i>Carduus juncea</i> )	<1
Dalmation toadflax ( <i>Linaria dalmatica</i> )	<1
Butter and eggs ( <i>Linaria vulgaris</i> )	<1
<b>Grand Total</b>	<b>2136</b>

<sup>1</sup> No inventoried invasive plants are located within the pine mastication treatment area.

Common Crupina comprises 67 percent, or 1,439 acres of the inventoried invasive plants population within the project area. A 1991 Environmental Assessment entitled Eradication of Common Crupina in Idaho states that this species first showed up in Grangeville, Idaho in 1968 (USDA, 1991). It has evolved, over 1,000's of year's developing the ability to survive harsh environments by genetic adaptation. It reproduces by seed, pioneering south-facing slopes which then see increased grazing pressure on remaining susceptible native grasses, and

eventually has the ability to create a monoculture. Seed can establish up to 300 feet from the mother plant, and further when transported by Chukar, etc. Recommended treatment is herbicide. Given the harsh landscape it inhabits application is often done by helicopter, which is not an approved method on the Nez Perce- Clearwater National Forest. Since less than 10 acres of Crupina falls within treatment areas, no large changes in population is expected.

## **Invasive Plants Expansion Probability**

As previously mentioned, invasive plants expansion probability takes into account four factors: susceptibility, as determined by habitat type groups (HTG); as well as, known occurrence (seed source) as shown in Table 1; site disturbance (fire/harvest/grazing) within the past 10 years; and spread vector (adjacency to roads/trails).

The HTGs in the project area and corresponding susceptibility of that habitat type are largely influenced by elevation, climate, soil type, and canopy cover. Habitat type groups (HTGs) in the project area are susceptible to invasive plants invasions at varying degrees as noted in parenthesis. The primary HTGs in the project area are Moderately Warm/Dry Douglas Fir (High), Moderately Warm/Dry Grand Fir (Low/Mod), and Grassland Steppe (High). In lesser scattered amounts are Moderately Warm/Moist Grand Fir (closed/low), and Warm and Dry Ponderosa Pine and grass (High). In summary, approximately 95 percent of the project area habitat can be characterized as having a moderate or high susceptibility to invasive plants, with low or closed areas making up only a small part of the area.

The project area has not received significant disturbance from fire or timber harvest in the past 10+ years; however, livestock grazing occurs over the entire project area annually. Although livestock can play a role in transmitting weeds, especially those that cling to an animal's hair, the arguably largest vector for spread of invasive plants is by motorized equipment. This area has nearly 67 miles of road in the Sherwin Creek Allotment and 46 miles in the Christy Creek Allotment, although many are no longer accessible to full-size vehicle travel.

Currently, the largest infestation in the project area occurs on the steep canyon grasslands to the north of Christie Creek and on Center Ridge. The approximately 1,439 acres of Common Crupina and associated annual grasses such as Cheatgrass, Ventenata, and Medusahead Rye are thought to be more a function of plant phenology and site conditions than site disturbance.

Modeling of the above-mentioned factors approximates that less than 1 percent of the project area is considered extreme risk to invasive plants invasion, while another 11 percent is rated as having a high risk, 85 percent of the project area is of moderate risk to invasion, and 4 percent is low risk. See Table 2.

**Table 2. Invasive Plants Expansion Probability within Project Area by Acres**

<b>Invasive Plants Expansion Probability</b>	<b>Acres</b>	<b>Percent of Project Area</b>
Extreme	29	<1
High	1,108	11
Moderate	8,270	85
Low	388	4
Closed	-	-
Total	9,794 <sup>1</sup>	100

<sup>1</sup>Slivers in data create 7 acre discrepancy. Project area total is 9,801 acres.

## ***Direct, Indirect and Cumulative Effects***

### ***Alternative 1 – No Action with Wildfire***

The no action alternative would result in the continuation of the weed management strategies developed across the Salmon River Basin under the existing Forest decision (USDA-FS 1988). Invasive plants would continue to be managed with a high-priority/eradicate-objective within the analysis area. Levels of herbicide applications within

the analysis area would remain at current levels in the short-term. In the long-term rates would decline or increase based upon the priority the analysis area receives within the Salmon River Weed Management Area (SRWMA).

No vegetation treatments would occur under this alternative. Plant succession would move the area toward more dense stands with multiple canopies in forested HTGs. An increased stand density would also increase the risk of stand replacing fires; however, denser overstory and understory vegetation would decrease the rate and spread of invasive plants until stand replacement fires occur.

A burn severity model was run to project a potential wildfire within the project area based on Alternative 1 – No Action. This data was compared to the invasive plant expansion probability model to determine total acres at moderate to extreme risk of expansion within each burn severity class. This projects that 66 percent of the project area at moderate risk, and 3% at high to extreme risk, for invasive plant expansion fall with the high burn severity class. As a result, a wildfire can be potentially significantly impact invasive plant population density and spread.

**Table 3. Modeled Wildfire Burn Severity in comparison to Invasive Species Expansion Probability**

<b>Burn Severity Class</b>	<b>Moderate Invasive Species Expansion Probability</b>	<b>High to Extreme Invasive Species Expansion Probability</b>
Unburned	0	0
Low	822	38
Moderate	978	828
High	6,461	266

### ***Alternative 2 and Alternative 2 with Modification***

Alternative 2 and Alternative 2 with Modification are very similar in disturbed acres and have greatest potential for invasive plant expansion. It is recognized that the actual treatment acres or actual amount of ground disturbing activity would likely be less than the gross acres displayed. The same as with Alternative 1, invasive plants would continue to be managed with a high-priority/eradicate-objective within the analysis area (USDA-FS 1988). The need for the level of herbicide application would increase initially under the action alternatives as existing populations are treated and design measure for other activities is developed and implemented.

Alternative 2 would need the highest levels of potential herbicide application. Assuming weed management actions are effective, herbicide application levels would taper off over time, probably within several years. Because of ground disturbing activities, Alternative 2 and Alternative 2 with Modification would take the longest time to taper off to pretreatment levels of herbicide application. Once populations are contained, herbicide application would remain at constant, being applied on an as needed basis.

Four design measures would be applied to these alternatives to minimize any harmful effects associated with the spread of invasive plants (See Chapter 2, Alternatives). These design measures are designed to meet the guidance of the Executive Order 13112, the Forest Plan and Forest Service policy.

**Timber Harvest Actions.** Under Alternative 2 and Alternative 2-modified silviculture treatments on approximately 3,044 to 3,081 acres using intermediate and regeneration harvest have the ability to introduce new or nearby species to un-infested locations, as well as, increase the current populations through ground disturbing activities. The level of expansion depends directly on how well design criteria are followed. How fast each weed species would spread in response to ground disturbing actions is dependent on many factors such as weather and timing of activities. This project proposes the first harvest entry within the project area since the 1980's. Since harvest in the project area ended over 30 years ago and has since been restocked, it has little to no impact on cumulative effects.

**Prescribed Burn.** Invasive plants populations within the prescribed burn area include Common Crupina (6 acres), Gypsyflower (4 acres), and Spotted Knapweed (3 acres). Common Crupina, a winter annual, and Gypsyflower and Spotted Knapweed, both biannual, each benefit from the increased sunlight to the soil surface following fire and the nutrient flush that may aid species adapted to quickly colonize open sites (DiTomaso, 2013). However, the other two listed species are Priority 2 populations that may be well-established in places, but

any new infestations are targeted for eradication and existing sites are controlled to prevent spread. Since the proposed prescribed burn takes place post-harvest in currently densely timbered portions that do not have a current seed source, and the inventoried invasive population are only located on the fringe of the burn perimeter, impacts of the prescribed burn are expected to be heavily outweighed by the ecological benefits provided to the unit area.

Conversely, repeated fire entries may have a cumulative effect on the spread of weeds. The largest recent fire within the Center-Johnson project area was the Poe Cabin fire in 2007 which burned approximately 300 acres. Prior to Poe Cabin, approximately 80 acres had burned in the project area prior to the 1940's. Fire, whether prescribed or natural, reduces fuels and contributes to more natural forest community, but in some instances promotes invasive plants propagation by providing a nutrient flush and a temporary decline in competition from native grasses and forbs.

**Grassland Treatment.** Mastication of Ponderosa Pine encroachment on 70 acres of grasslands will occur on gentle ridgetops or areas less than 30 percent slope that do not require construction of roads or trails for equipment access. Impact from equipment tracts, although minimal, may create bare soil in places. These exposed sites are will likely remain small enough that pre-existing vegetation will recolonize quickly, closing niches available to invasive plants. The slash material created in the mastication process is small enough to rot in relative fast time; however, large enough to allow sun and light to penetrate underneath allowing forage production to continue, rather than forming a dense carpet that chokes out existing vegetation.

Though proposed activities of this project will increase overall invasive plants risk for a time, habitat readily available for invasion in the long term should eventually decline due to restoration, advancement of succession and modern invasive plants management.

### Invasive Plants Inventory Data (Indicator 1)

In the 9,855 acre project area the situation has been influenced by over 100 miles of road, pre-1990's timber harvest and extensive areas of susceptible habitat. Current inventories indicate about 2,136 acres are infested with designated noxious weed species. Even though large blocks of less suitable habitat have not been recently surveyed, sufficient suitable locations including travel corridors, burned areas, past timber treatments, trails, and private lands have been surveyed to indicate a reasonable picture of the invasive plants situation.

**Table 4. Acres of Inventoried State-Listed Noxious Invasive Plants**

Species	Harvest Units		Prescribe Burn
	Alternative 2	Alternative 2 w/ Modification	Alternative 2 & Alt. 2 w/ Mod
Common crupina ( <i>Crupina vulgaris</i> )	3	3	6
Yellow star-thistle ( <i>Centaurea solstitialis</i> )	<1	<1	-
Spotted knapweed ( <i>Centaurea biebersteinii</i> )	<1	<1	3
Rush Skeletonweed ( <i>Chondrilla juncea</i> )	<1	-	-
Gypsyflower ( <i>Cynoglossum officinale</i> )	36	36	4
Spiny plumeless thistle ( <i>Carduus juncea</i> )	<1	<1	-
Dalmation toadflax ( <i>Linaria dalmatica</i> )	<1	-	-
Butter and eggs ( <i>Linaria vulgaris</i> )	<1	<1	-
<b>Grand Total</b>	<b>42</b>	<b>42</b>	<b>13</b>

<sup>1</sup> No inventoried invasive plants are located within the pine mastication treatment area.

### Invasive Plants Expansion Probability (Indicator 2)

The type and amount of ground disturbing and/or habitat altering activity for all alternatives was assessed and compared to weed expansion risk zones. Acres of activity occurring in moderate, high, and extreme weed expansion risk zones were calculated for all alternatives and treatment needs estimated. Table 4 displays potential weed treatment acres by activity occurring in the moderate, high, and extreme weed expansion risk zones.

**Table 5. Invasive Plants Expansion Probability Acres by Treatment**

Invasive Plants Expansion Probability	Prescribed Burn	Mastication	Alternative 2	Alternative 2, w/ Modification
Extreme	4	-	<1	<1
High	623	31	24	24
Moderate	324	39	2936	2899
Low	87	-	114	114
Closed	-	-	-	-
Total	1,037	70	3,074 <sup>1</sup>	3,037 <sup>1</sup>

<sup>1</sup> Slivers in data create 7 acre discrepancy. Silviculture treatment totals are 3,081 and 3,044.

**Transportation Actions.** Road construction generally associated with timber management has built nearly 113 miles of roads in the project area. Most of these roads are no longer open; however, proximity of the project area to the city of White Bird and its expansive road/trail systems, makes this area very popular for motorized recreation. These linear corridors act as dispersal conduits for invasive plants, as well as, creating sustained levels of soil disturbance that promotes establishment of invasive plants, and thus propagules for ongoing dispersal, they also create access for the treatment and monitoring of otherwise inaccessible areas.

Miles of road reconditioning were converted to acres of disturbance using 50 foot road width. The disturbed acres associated with road work in Alternative 2 in comparison to Alternative 2 with modification only vary by 6 acres of disturbance within habitats at moderate risk for weed expansion. Again, as with the vegetation treatments and burning, with proper design criteria weed populations would not expand, and would be expected to decline due to treatments.

**Table 6. Acres of Road Disturbance within Invasive Plant Expansion Probability Classes by Alternative**

Invasive Plants Expansion Probability	Alternative 2	Alternative 2, w/ Modification
Extreme	-	-
High	2	2
Moderate	147	141
Low	3	3
Closed	-	-

## *Effectiveness of Design Measures*

**Table 7. Design Measures**

Non-native Invasive Plants			
	Mitigation measure	Applies to	Effectiveness
1.	Remove all mud, soil and plant parts from off road equipment before moving into project area to limit the spread of noxious weeds. Conduct cleaning off National Forest lands.	All equipment used on NFS for all project activities	Moderate, based on experience.
2.	Use Forest Service approved native seed species or non-native annual species to meet erosion control needs and other management objectives. Follow regional plant and seed transfer guidelines. Require contractors to use certified seed laboratories to test seed against the all state noxious weed list, and provide documentation of the seed inspection test provided to the contract administrator. Apply only certified weed-free seed and mulch.	Revegetation with native plants	Moderate, based on experience.
3.	Use Forest Service approved rock sources.	All activities	
4.	Identify and report invasive species infestations, on or adjacent to the activity sites, to the District Weed Coordinator.	All activities	



### ***Consistency with the Forest Plan and Environmental law***

The Forest Plan calls for the coordination of an invasive plants control program with county, state and other federal agencies. This directive is met through the participation of the Forest in the Annual Operating Plan for the Salmon River Weed Management Area, a community based cooperative.

The Executive Order 13112 for invasive plants directs federal agency duties to “not authorize, fund, or carry out actions that it believes are likely to cause or promote the introduction or spread of invasive plants in the United States or elsewhere unless, pursuant to guidelines that it has prescribed, the agency has determined and made public its determinations that the benefits of such actions clearly outweigh the potential harm caused by invasive plants; and that all feasible and prudent measures to minimize risk of harm would be taken in conjunction with the actions.”

The actions proposed in the Center-Johnson project area would likely cause the spread of invasive plants to some degree. However, this potential harm would be outweighed by the overall benefits to the watershed by the vegetative treatments. Design measures would be implemented to minimize any harmful effects associated with the spread of invasive plants. These design measures are designed to meet the guidance of the Executive Order.

As previously stated, analysis and evaluation of invasive plants in this project was based on direction contained in The Federal Noxious Weed Law (1974) as amended (1975), Executive Order 13112 for invasive plants, Forest Service policy (FSM 2080.5; 2000-95-5; USDA-FS 1995), Northern Region Supplement (FSM 2080; R1 2000-2001-1; USDA-FS 2001), Implementation of Integrated Weed Management on National Forest System lands in Region 1, and the Nez Perce National Forest Plan (II-7,II-20,II-26,III-6).

### ***Irreversible or Irretrievable Effects***

The loss of native vegetation to invasive plants infestation would be a possible irretrievable effect. This resource loss could potentially be irreversible as well, spanning several generations if active restoration to native species is not pursued. Depending upon the level and extent of native vegetation converted by exotic plant invasions, extremely intensive restoration work could retrieve lost native habitats.

## ***References***

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## **Executive Orders, United States Code, Code of Federal Regulations, Public Laws**

64 FR 25. 1999. Executive Order 13112 of February 3, 1999. Invasive Species. *Federal Register*. W. J. Clinton. pp. 6183–6186.

Executive Order 13112, “Invasive Species,” February 3, 1999.

Public Law 93–629. 1975. The Federal Noxious Weed Act of 1974. 88 Stat. 2148. Enacted January 3, 1975.

Figure 1. Alternative 2 – Invasive Plants Inventory Map

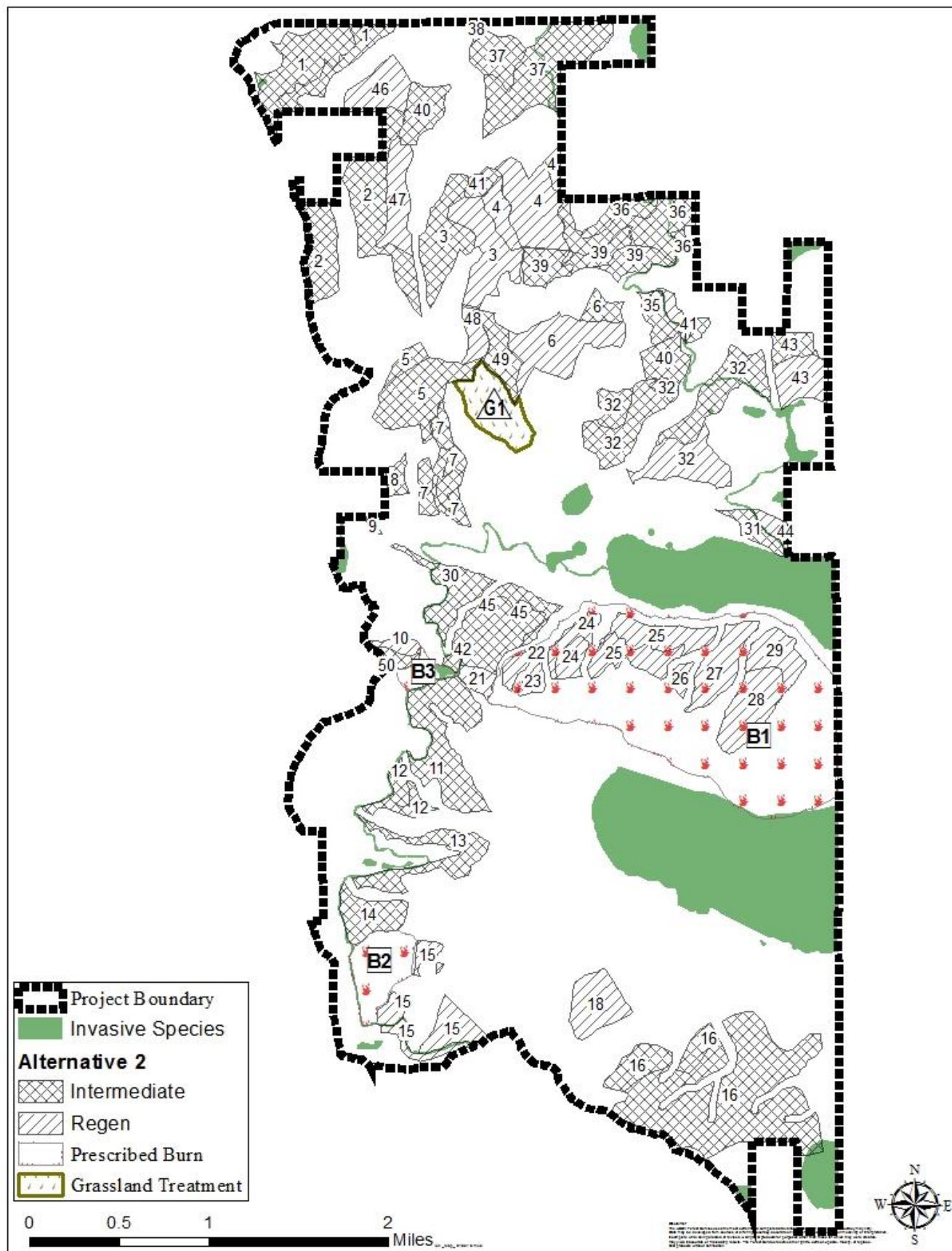


Figure 2. Alternative 2 w/ Modification- Invasive Plants Inventory Map

